

### **Abstract of the Disclosure**

An apparatus 10 is provided that includes a spatial array of at least two unsteady pressure sensors 18 - 21 placed at predetermined axial locations  $x_1 - x_N$  disposed axially 5 along a pipe 14 for measuring at least one parameter of a fluid 12 flowing in the pipe 14. The pressure sensors 18 - 21 comprise a plurality of pressure sensing elements such as piezoelectric film sensors 23 for measuring unsteady pressures associated with acoustical pressures and/or vortical disturbances. The sensing elements are disposed circumferentially around the pipe and spaced a predetermined distance. The pressure signals  $P_1(t) - P_N(t)$  10 provided by the pressure sensors 18-21 are processed by a processing unit to provide an output signal indicative of a parameter of the fluid.